

## CLAIMS:

1. A support for a lithographic printing plate obtained by performing graining treatment including electrochemical graining treatment on an aluminum plate,

wherein said aluminum plate is an aluminum plate which contains Fe of 0.20 to 0.29 wt%, Si of 0.03 to 0.15 wt%, Cu of 0.020 to 0.040 wt% and Ti of 0.050 wt% or less and whose remaining portion is composed of Al and unavoidable impurities,

and wherein surface area ratio and steepness obtained from three-dimensional data by measuring  $512 \times 512$  points in  $5 \mu\text{m} \times 5 \mu\text{m}$  on the surface with an atomic force microscope each satisfies the following conditions (i) to (vi):

- (i) Surface area ratio  $\Delta S^5$  is 30 to 70%;
- (ii) Surface area ratio  $\Delta S^{5(0.2-5)}$  is 10 to 30%;
- (iii) Surface area ratio  $\Delta S^{5(0.02-0.2)}$  is 30 to 70%;
- (iv) Steepness  $a45^5$  is 20 to 50%;
- (v) Steepness  $a45^{5(0.2-5)}$  is 5 to 20%; and
- (vi) Steepness  $a45^{5(0.02-0.2)}$  is 20 to 60%,

wherein  $\Delta S^5$  which is found by the following equation from actual area  $S_x^5$  found by approximation three-point method from said three-dimensional data and geometrically

measured area  $S_0^5$  is surface area ratio expressed by  $\Delta S^5 = [ (S_x^5 - S_0^5) / S_0^5 ] \times 100 (\%)$ ;

$\Delta S^{5(0.2-5)}$  which is found by the following equation from actual area  $S_x^{5(0.2-5)}$  obtained by extracting a component with wavelength of 0.2  $\mu\text{m}$  or longer and 5  $\mu\text{m}$  or shorter from said three-dimensional data and geometrically measured area  $S_0^5$  is surface area ratio expressed by  $\Delta S^{5(0.2-5)} = [ (S_x^{5(0.2-5)} - S_0^5) / S_0^5 ] \times 100 (\%)$ ;

$\Delta S^{5(0.02-0.2)}$  which is found by the following equation from actual area  $S_x^{5(0.02-0.2)}$  obtained by extracting a component with wavelength of 0.02  $\mu\text{m}$  or longer and 0.2  $\mu\text{m}$  or shorter from said three-dimensional data and geometrically measured area  $S_0^5$  is surface area ratio expressed by  $\Delta S^{5(0.02-0.2)} = [ (S_x^{5(0.02-0.2)} - S_0^5) / S_0^5 ] \times 100 (\%)$ ;

steepness  $a45^5$  is an area rate of a portion (area) having a slant with size of angle of  $45^\circ$  or bigger (gradient of  $45^\circ$  or bigger) to actual area  $S_x^5$  found by approximation three-point method from said three-dimensional data;

steepness  $a45^{5(0.2-5)}$  is an area rate of a portion (area) having a slant with size of angle of  $45^\circ$  or bigger (gradient of  $45^\circ$  or bigger) to actual area  $S_x^{5(0.2-5)}$  found by extracting a component with wavelength of 0.2  $\mu\text{m}$  or longer

and 5  $\mu\text{m}$  or shorter from said three-dimensional data; and

steepness  $a45^{5(0.02-0.2)}$  is an area rate of a portion (area) having a slant with size of angle of  $45^\circ$  or bigger (gradient of  $45^\circ$  or bigger) to actual area  $S_x^{5(0.02-0.2)}$  found by extracting a component with wavelength of 0.02  $\mu\text{m}$  or longer and 0.2  $\mu\text{m}$  or shorter from said three-dimensional data.

2. A support for a lithographic printing plate obtained by performing graining treatment including electrochemical graining treatment on an aluminum plate,

wherein said aluminum plate is an aluminum plate which contains Fe of 0.20 to 0.29 wt%, Si of 0.03 to 0.15 wt%, Cu of 0.020 to 0.040 wt% and Ti of 0.050 wt% or less and whose remaining portion is composed of Al and unavoidable impurities,

and wherein surface area ratio and steepness obtained from three-dimensional data by measuring  $512 \times 512$  points in  $50 \mu\text{m} \times 50 \mu\text{m}$  on the surface with an atomic force microscope each satisfies the following conditions (xi) to (xvi):

(xi) Surface area ratio  $\Delta S^{50}$  is 30 to 70%;

(xii) Surface area ratio  $\Delta S^{50(2-50)}$  is 5 to 10%;

(xiii) Surface area ratio  $\Delta S^{50(0.2-2)}$  is 15 to 40%;

(iv) Steepness  $a45^{50}$  is 25 to 60%;

(xv) Steepness  $a45^{50(2-50)}$  is 0 to 3.0%; and

(xvi) Steepness  $a45^{50(0.2-2)}$  is 10 to 40%,

wherein  $\Delta S^{50}$  which is found by the following equation from actual area  $S_x^{50}$  found by approximation three-point method from said three-dimensional data and geometrically measured area  $S_0^{50}$  is surface area ratio expressed by  $\Delta S^{50} = [(S_x^{50} - S_0^{50}) / S_0^{50}] \times 100 (\%)$ ;

$\Delta S^{50(2-50)}$  which is found by the following equation from actual area  $S_x^{50(2-50)}$  obtained by extracting a component with wavelength of 2  $\mu\text{m}$  or longer and 50  $\mu\text{m}$  or shorter from said three-dimensional data and geometrically measured area  $S_0^{50}$  is surface area ratio expressed by  $\Delta S^{50(2-50)} = [(S_x^{50(2-50)} - S_0^{50}) / S_0^{50}] \times 100 (\%)$ ;

$\Delta S^{50(0.2-2)}$  which is found by the following equation from actual area  $S_x^{50(0.2-2)}$  obtained by extracting a component with wavelength of 0.2  $\mu\text{m}$  or longer and 2  $\mu\text{m}$  or shorter from said three-dimensional data and geometrically measured area  $S_0^{50}$  is surface area ratio expressed by  $\Delta S^{50(0.2-2)} = [(S_x^{50(0.2-2)} - S_0^{50}) / S_0^{50}] \times 100 (\%)$ ;

steepness  $a45^{50}$  is an area rate of a portion (area) having a slant with size of angle of  $45^\circ$  or bigger (gradient of  $45^\circ$  or bigger) to actual area  $S_x^{50}$  found by approximation three-point method from said three-

dimensional data;

steepness  $a45^{50(2-50)}$  is an area rate of a portion (area) having a slant with size of angle of  $45^\circ$  or bigger (gradient of  $45^\circ$  or bigger) to actual area  $S_x^{50(2-50)}$  found by extracting a component with wavelength of  $2\text{ }\mu\text{m}$  or longer and  $50\text{ }\mu\text{m}$  or shorter from said three-dimensional data; and

steepness  $a45^{50(0.2-2)}$  is the area rate of a portion (area) having a slant with size of angle of  $45^\circ$  or bigger (gradient of  $45^\circ$  or bigger) to actual area  $S_x^{50(0.2-2)}$  found by extracting a component with wavelength of  $0.2\text{ }\mu\text{m}$  or longer and  $2\text{ }\mu\text{m}$  or shorter from said three-dimensional data.

3. The support for a lithographic printing plate according to claim 1, wherein the number of local deep areas with a depth of  $5\text{ }\mu\text{m}$  or more existent on the surface is 1.0 or less per  $400\text{ }\mu\text{m} \times 400\text{ }\mu\text{m}$ .

4. The support for a lithographic printing plate according to claim 2, wherein the number of local deep areas with a depth of  $5\text{ }\mu\text{m}$  or more existent on the surface is 1.0 or less per  $400\text{ }\mu\text{m} \times 400\text{ }\mu\text{m}$ .

5. The support for a lithographic printing plate according to claim 1, wherein Si atom attached quantity on

the surface is 0.1 to 30 mg/m<sup>2</sup>.

6. The support for a lithographic printing plate according to claim 2, wherein Si atom attached quantity on the surface is 0.1 to 30 mg/m<sup>2</sup>.

7. The support for a lithographic printing plate according to claim 3, wherein Si atom attached quantity on the surface is 0.1 to 30 mg/m<sup>2</sup>.

8. A presensitized plate provided with an image recording layer on the support for a lithographic printing plate according to claim 1.

9. A presensitized plate provided with an image recording layer on the support for a lithographic printing plate according to claim 2.

10. A presensitized plate provided with an image recording layer on the support for a lithographic printing plate according to claim 3.

11. A presensitized plate provided with an image recording layer on the support for a lithographic printing

plate according to claim 4.

12. A presensitized plate provided with an image recording layer on the support for a lithographic printing plate according to claim 5.

13. A presensitized plate provided with an image recording layer on the support for a lithographic printing plate according to claim 6.

14. A presensitized plate provided with an image recording layer on the support for a lithographic printing plate according to claim 7.

15. The presensitized plate according to claim 8, wherein the presensitized is a presensitized plate for a laser printing plate.

16. The presensitized plate according to claim 9, wherein the presensitized is a presensitized plate for a laser printing plate.

17. The presensitized plate according to claim 10, wherein the presensitized is a presensitized plate for a

laser printing plate.

18. The presensitized plate according to claim 11, wherein the presensitized is a presensitized plate for a laser printing plate.

19. The presensitized plate according to claim 12, wherein the presensitized is a presensitized plate for a laser printing plate.

20. The presensitized plate according to claim 13, wherein the presensitized is a presensitized plate for a laser printing plate.

21. The presensitized plate according to claim 14, wherein the presensitized is a presensitized plate for a laser printing plate.